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ABSTRACT

THIS REPORT DESCRIBES A STUDY INSTITUTED TO DETERMINE WHETHER ATTITUDE SCALES STANDARDIZED ON A WHITE POPULATION FALTER WHEN APPLIED TC BLACK SUBJECTS. THE SUBJECTS WERE 656 WHITE AND BLACK COLLEGE STUDENTS, 457 OF THESE BEING MIDDLE CLASS WHITE STUDENTS, 29 MIDDLE CLASS BLACK STUDENTS, AND 70 LOWER CLASS BLACK STUDENTS. EIGHT SEMANTIC DIFFERENTIAL SCALES WERE ADMINISTERED, SIX OF WHICH WERE RELATED TC STUDYING, LEARNING, LECTURES, GROUP DISCUSSION, AND COLLEGE GRADUATES. THE REMAINING TWC WERE RELATED TO SELF-PERCEPTICN: REAL SELF AND IDEAL SELF. FINDINGS OF THE STUDY SUGGESTED THAT THE STRUCTURE OF PERCEPTIONS CF CONCEPTS RELATED TC HIGHER LEARNING DIFFERS FOR BLACKS AND WHITES, AS WELL AS FOR LOWER CLASS AND MIDDLE CLASS BLACKS. THE FINDINGS THUS QUESTION THE UNIVERSALITY CF CSGCCD'S SEMANTIC SPACE (OSGOOD, SUCI, AND TANNENBAUM, 1957) BY SUGGESTING IHAT ADJECTIVAL MEASURES OF THE SAME FACTORS VARY ACROSS ETHNIC GROUPS. NOT AVAILABLE IN HARD COPY DUE TO MARGINAL LEGIBILITY OF ORIGINAL DCCUMENT. (KG)

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The Effect Of Ethnic and Social Class Variables on Semantic Differential Performance*

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The Semantic Differential (Osgood, Suci & Tannenbaum, 1957) is a test which was initially concerned with the measurement of meaning, but its function was later extended to the measurement of attitudes. According to this technique, concepts are quantified and described in terms of bipolar adjective pairs. This test differs from other attitude scales in that it is not limited to an evaluative dimension, since the adjective pairs load primarily on three factors rather than a single factor. These three factors, which are named respectively, Evaluative, Potency and Activity, account for the major portion of the variance. Among the many adjective pairs considered by Osgood et al, the adjectives cited below were reported to load in the following manner:

Evaluative	Potency	Activity
valuable - worthless	strong - weak	active - passive
interesting - dull	rough - smooth	slow - fast
sad - happy	broad - narrow	dull - sharp
poor - rich	shallow - deep	hot - cold
good - bad	soft - hard	
pleasant - unpleasant	light - heavy	

Osgood et al indicate that the loadings on each factor should be constant over time and for all subjects. They also stated that the Evaluative factor should always have the largest latent root (i.e. account for the most variance), and that the loadings on each factor should be constant over time and for

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all cultures. This would make comparisons of concepts in the semantic space possible for different groups.

The Semantic Differential was conceived as a means of refuting the Whorf-Sapir hypothesis (1956). This hypothesis specifies that language is a main determinant of thought patterns and perceptions of a given culture. Moreover, since language varies from culture to culture, thought patterns and perceptual style will also differ. Therefore, if the factor structure of the Semantic Differential is diverse for different groups in the population, this would refute universality, and in that sense provide support for the Whorf-Sapir hypothesis.

Data from a small pilot study did indicate that the Osgood assumption of universality might not hold for different ethnic groups. This larger study was instituted to more clearly determine whether attitude scales standardized on a white population falter when applied to black subjects.

SUBJECTS: The sample consisted of 656 white and black college students from various colleges in New York City. There were 457 middle class white students; 29 middle class black students; and 70 lower class black students. Class was determined primarily by economic factors.

PROCEDURE: Eight Semantic Differential scales were administered, six of which were related to the process of education: Studying, Learning, Lectures, Group Discussion and College Graduate. The remaining two were related to self-perception: Real Self, and Ideal Self. For each of the eight concepts, twelve adjectives pairs from the 16 cited above, four each representative of Evaluation, Potency and Activity, served as the 7-point rating scales. All adjectives chosen had high loadings on their respective factors as determined by Osgood. For each concept within each of three groups, separate factor

analyses were performed, 24 altogether. A Principal Components method factoring the 12 x 12 matrix was employed with "termination criteria" satisfied once three factors were extracted. The unrotated factors were then rotated subject to the constraints of Kaiser's VARIMAX criteria. This rotation positions the rotated factors such that the rotation approximates Thurstone's "simple structure". The rotated factors for each concept within each group serve as the unit of analysis for comparison purposes.

Comparisons were made of the factor structures among the subject groups and for each of these groups with Osgood's loadings. Osgood et al, when constructing their set of "typical" adjective loadings pooled adjective pairs across concepts to reduce within concept variation. We have done the same for these comparisons. Because of the different factoring methods employed (Osgood et al - centroid, and our Principal Components Methods) only simple comparisons were made. The number of times a given adjective pair loaded highest on a factor other than the one specified by Osgood was calculated for each group.

RESULTS AND DISCUSSION:

Comparison with Osgood's Findings

The middle class whites most closely resemble Osgood's loadings, since 12 of the 16 adjective pairs load on the same factors. However, middle class blacks differed on 7 and lower class blacks on 8 adjective pairs. Pooling all three groups, only four out of 16 pairs load on the factors Osgood would predict. In addition, two adjective pairs (shallow-deep and active-passive) load highest for all three groups on factors other than the one specified by Osgood. (However these pairs are not the most stable adjectives.)

Constraints of the Semantic Space

In all comparisons for all concepts, the three factors (Evaluation, Potency and Activity) constrain the semantic space more for lower and middle class blacks than for whites (Table 1).

(Insert Table 1 about here)

The three factors explain more variance for the black groups on all concepts, but in some cases differences between concepts are larger than the between group differences. In terms of the concepts, Group Discussion is the most constrained, while self evaluations, such as Real Self and Ideal Self, are the least constrained, with the other concepts being intermediate.

Only minor differences exist between the two black groups, except on two concepts, Studying and Ideal Me. Here, the three factors account for 7% more variance in the lower class black group than the middle class black group.

Differentiation of the Semantic Space

Only in the case of two concepts, Ideal Me and Student, is there agreement for all three groups in the primary factor underlying the semantic space (Table 2). For example, in the case of Ideal Me, about 43% of the common variance is accounted for by the Evaluation factor for the two black groups, compared with nearly 50% for the white group.

(Insert Table 2 about here)

On two additional concepts, Learning and Lectures, the two black groups manifest a factor space with the Evaluative factor having the greatest

explanation power. For these same two concepts the Activity dimension is the primary one for the middle class whites.

Middle class whites and blacks perceive Studying and College Graduate with the same factors as primary, i. e. Activity in the former and Evaluation in the latter. Potency is the dominant factor in these two cases for the lower class blacks. At the same time Evaluation structures the semantic space of both whites and lower class blacks in the case of Real Me and Group Discussion, compared to Activity for middle class blacks.

These comparisons show the differences and similarities of concepts in the differentiation of the factor spaces within groups. For lower class blacks, the Evaluation factor tends to be the most primary (it consistently accounts for more common variance), whereas for the middle class blacks and whites, Activity plays almost as important a role in semantic differentiation.

Both in terms of constraints and differentiation, the black sample, especially the lower-class blacks, appears different than whites. But this does not imply any equivalence between factor structures, even though similarities in differentiation and primacy occur at a general level. (Equivalance would require that items load at the same magnitude on all the factors for all the items.)

Semantic Equivalence

Harmon (1967) presents several simple indices to assess the rough equivalence of factor solution for the same set of variables on different samples. Most of the indices of factor similarity suggested by Harmon resemble correlations between loadings on pairs of factors.

Therefore, we correlated factor loadings across groups. If the factor solutions for each group are equivalent or highly similar, the

correlations between their respective factors should be significant. With loadings on twelve adjectives (which are the number of observations on which the correlations are based) a correlation of .576 is needed for significance at the .05 level (10 d.f.). This would be considered the minimal criterion of equivalence.

Correlations between factors and groups were computed within each of four concepts; Real Me, Ideal Me, Learning and College Graduate. The self-concept measures were chosen because of their relevance to future academic success. Learning, in turn, is the means by which students succeed academically; and College Graduate is the state to which expectations develop and aspirations rise.

By this method, in order for equivalence among factor solutions of the groups to be complete, it would be necessary to have significant correlations on all three factors. If significant correlations occur only on selected factors, then this would imply that certain dimensions of the semantic space were similar, but not the entire space.

LEARNING: On this concept, no significant correlations occur for any factor or group. This is not surprising, for in terms of differentiation, the factors act differently as pointed out previously. The process of learning has three distinct perceptions.

IDEAL ME: In this case, the Evaluation and Activity factors for the middle class whites and blacks correlate highly (above .815), but Potency does not exhibit such a relationship. None of the factors of the lower class blacks correlate significantly with either middle class group. This is the best example of factorial similarity present among these concepts. Substantially, this finding suggests that the perception of an ideal self by the middle class blacks mirrors that of the middle class whites, rather than that of the lower class blacks, in terms of both Evaluation and Activity, but not in terms of Potency. Differences in

Potency may suggest real differences in expectations for future power, especially when one considers the current social status of these groups.

REAL ME: Only the potency factor correlates significantly within this concept, and, once again, the correlation is between middle class blacks and whites. The lack of correlation between black groups points to differences in the perception of their own power and control.

COLLEGE GRADUATE: Evaluation as a factor correlates significantly for both black groups. Considering the adjectival components of the evaluative factor, this similarity may indicate that both groups of blacks have the same expectations and aspirations for a college graduate.

The fact that the within concept factor correlations are for the most part not significant, raises questions about the "universality" claim of Osgood et al. Secondly, when factorial similarity does occur, it is primarily between the middle class groups, suggesting a class bias in the perceptions of concepts. Thirdly, just because the same factor has primacy in two semantic spaces, this does not imply similarity of the spaces, since the adjectives that load on the factor may have different meanings perhaps conditioned by group membership.

IMPLICATIONS AND CONCLUSIONS: These findings suggest that the structure of the perceptions of concepts related to higher learning differs for blacks and whites, as well as for lower class and middle class blacks, and question the universality of Osgood's semantic space by suggesting that adjectival measures of the same factors vary across ethnic groups. The close resemblance of the white subjects' factor structure to the factor structure specified by Osgood, suggests that there may be a white, middle class bias to his set of factor loadings, which reveals differences in the structure of social perceptions and social values.

The possibility is raised that for certain ethnic groups either values must be changed to insure academic success, or perhaps the criteria for academic success must be reevaluated. Academic motivation and achievement for diverse ethnic groups may require several approaches, taking into account differences in the perceptions of the processes of higher education.

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TABLE 1

Percent of Variance Explained by Osgood's Evaluative, Potency and Activity Factors

	LOWER CLASS BLACKS		MIDDLE CLASS BLACKS		MIDDLE CLASS WHITES	
	Sum of Latent Roots	% of Variance Explained*	Sum of Latent Roots	% of Variance Explained	Sum of Latent Roots	% of Variance Explained
Studying	6.60	55.0	7.32	61.0	6.05	50.4
Learning	6.87	57.2	7.22	60.1	6.08	50.6
Lectures	7.83	65.2	8.02	66.8	6.95	57.9
Ideal Me	6.30	52.5	7.16	59.6	6.24	52.0
Real Me	6.90	57.5	6.59	54.9	6.28	52.3
Student Group Discussion	7.46	62.2	7.57	63.0	7.02	58.4
College Graduate	7.94	66.1	8.14	67.8	7.73	64.4
	7.56	63.0	7.59	63.2	6.74	56.1

*The sum of the laten roots for each factor retained as a meaningful dimension of the correlation matrix, divided by the order of the correlation matrix indicates the success of the factor analysis. It estimates the percentage of variance explained by this set of factors for the correlation matrix.

TABLE 2

Percent of Common Variance Accounted for Each Factor by Concept and Group

	Lower Class Blacks			Middle Class Blacks			Middle Class Whites		
	Evaluative	Potency	Activity	Evaluative	Potency	Activity	Evaluative	Potency	Activity
Studying	33.7	36.5	29.8	27.1	30.1	42.8	33.4	27.6	39.0
Learning	41.5	32.9	25.6	47.0	30.8	22.2	35.8	27.1	37.1
Lectures	56.4	22.1	21.5	42.9	23.8	33.3	37.1	21.1	41.8
Ideal Me	43.3	31.3	25.4	43.2	22.9	33.9	49.6	16.9	36.7
Real Me	49.7	31.4	18.9	32.2	31.2	36.6	49.2	29.4	21.4
Student	40.8	34.0	25.2	43.5	28.3	28.2	46.2	21.1	32.7
Group Disc	50.1	17.6	32.3	28.7	26.4	44.8	44.2	36.4	19.4
College Grad	34.1	34.4	31.5	48.5	24.1	27.4	41.9	42.6	15.5

TABLE 3

Correlations Between Factors and Groups For Learning, Ideal Me, Real Me and College Graduate

	LEARNING								
	EVALUATION			POTENCY			ACTIVITY		
L	LCB	MCB	MCW	LCB	MCB	MCW	LCB	MCB	MCW
Lower Class Blacks	1.00			1.00			1.00		
Middle Class Blacks	.054	1.00		.338	1.00		.383	1.00	
Middle Class Whites	.014	.295	1.00	.526	.020	1.00	.005	.423	1.00
	IDEAL ME								
Lower Class Blacks	1.00			1.00			1.00		
Middle Class Blacks	.613	1.00		.102	1.00		.038	1.00	
Middle Class Whites	.555	.925	1.00	.203	.223	1.00	.200	.816	1.00
	REAL ME								
Lower Class Blacks	1.00			1.00			1.00		
Middle Class Blacks	.382	1.00		.093	1.00		.152	1.00	
Middle Class Whites	.421	.390	1.00	.169	.613	1.00	.095	.032	1.00
	COLLEGE GRADUATE								
Lower Class Blacks	1.00			1.00			1.00		
Middle Class Blacks	.538	1.00		.009	1.00		.333	1.00	
Middle Class Whites	.483	.414	1.00	.101	.479	1.00	.032	.210	1.00